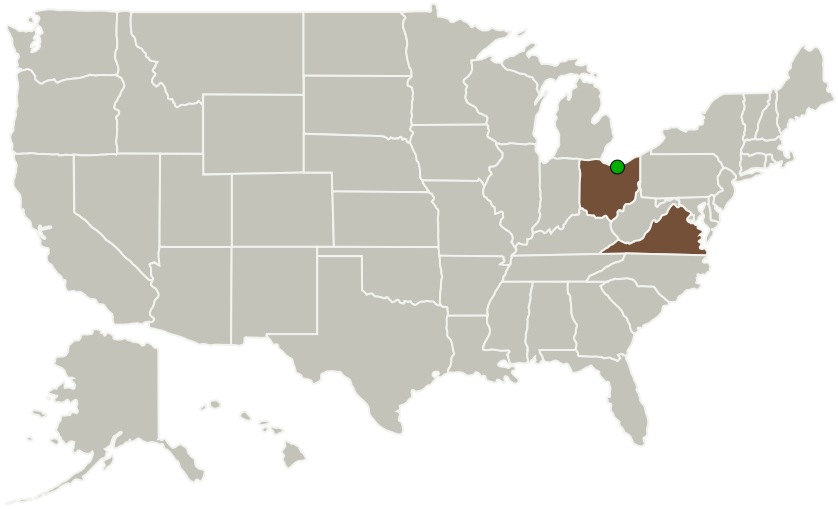
Temperature Sensing Solution for Cryogenic Space Engines, Phase I

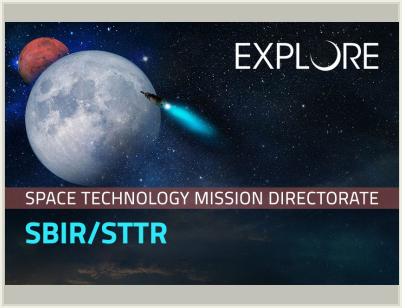
Completed Technology Project (2010 - 2010)

Project Introduction

Cryogenic systems, heavily used in rocket ground testing, space station operations, shuttle launch systems, etc, require a large number of temperature sensors for system management and control. Currently available temperature sensors cannot offer simultaneously sufficient reliability in highly corrosive environments of LOx and LH2 flows and sufficient temperature resolution. Development of new type of cryogenic temperature sensing solutions is needed to meet reliability and sensitivity requirements simultaneously and thus to provide NASA with more efficient, reliable solution for ground testing and flight missions. MicroXact Inc. proposes to develop highly sensitive, reliable sensing solution to address NASA needs that will offer ease of calibration and installation. In Phase I the feasibility of the solution will be experimentally demonstrated. In Phase II, sensors and system will continue to be refined and will undergo extensive testing and validation. By the end of Phase II, the proposed sensing solution will reach TRL 5. In Phase III, Luna will commercialize the developed sensors.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
MicroXact, Inc.	Lead Organization	Industry	Radford, Virginia
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Ohio	Virginia

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138533)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

MicroXact, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Paul F Hines

Co-Investigator:

Paul D Hines

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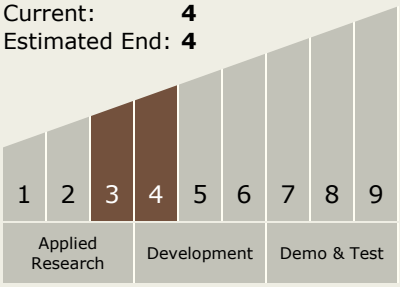
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.3 Cryogenic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System